雷達追蹤系統變速度估測研究

盧科宇、鍾翼能

E-mail: 9605025@mail.dyu.edu.tw

摘 要

雷達追蹤系統中的變加速度(Maneuvering Estimation)偵測之數學運算程序為主要的處理技術之一。在實際追蹤系統中，追蹤目標的變加速度運動是必須詳加考慮，若雷達系統不考慮此項變因，一旦追蹤目標作變加速度運動，系統將產生巨大的誤差，甚至無法完成追蹤任務。本論文中的變速度估測，考慮實際遭遇之各種情況進行模擬。並與加入適應性程序之方法進行比較。模擬結果顯示本論文所提出之演算法則將使追蹤系統獲得更精確的追蹤結果。

關鍵詞 : 變速度估測 ; 卡門濾波器 ; 適應性程序

目錄

參考文獻

[1] Y.N. Chung and D.L. Gustafson , and E. Emre , ” Extended Solution to Multiple Maneuvering Target Tracking , ” IEEE Trans. Aerosp Electron.Syst.Vol AES-25,pp.876-887,1990.

[2] Y.N. Chung and M.T. Lin , ” A Muliti-Target Tracking Algorithm Using Variable Sampling Rate , ” J. of Control .Vol.3,No.1, PP.33-41,1995.

[3] Y. Bar-Shalom and T.E. Fortmann, ” Tracking and Data Association, ” Academic Press,INC.1989.

[4] S.S.Blackman, “ Multiple-Target Tracking With Radar Applications “ pp.109-111,1986.

[5] Y.N.Chung and Joy Chen , ” Applying Both Kinematic and Attribute Information.for A Target Tracki Algorithm , ” J. of Control. Vol.5,No.3,P.P.203-209,1997.

[6] P.D.Hanlon and P.S. Maybeck, ” Interrelation Ship of Single-Filter and Multiple-Model Adaptive Algorithms, ” IEEE Trans. Aerosp. Electron. Syst. Vol. AES-34,PP.934-946,1998.

[7] E.Mazor,J Dayan,A.Averbuch &Y.Bar-Shalom, ” Interacting Multiple Model Methods in Target Tracking: A Survey, ” IEEE Trans. Aerosp. Electron. Syst. Vol AES-34, pp.103-124,1998..

[8] H.Lee & I-J Tahk, ” Generalized Input-Estimation Technique for Tracking Maneuvering Targets, ” IEEE Trans. Aerosp. Electron. Syst. Vol AES-35,pp.1388-1403,1999.

[9] K.A.Fisher & P.S.Maybeck, ” Multiple Adaptive Estimation with Filter Spawning, ” IEEE Trans. Aerosp. Electron. Syst.Vol.38,No.3,pp.755-768,2002.

[10] N.Okello & B.Ristic, ” Maximum Likelihood Registration for Multiple Dissimilar Sensors, ” IEEE Trans. Aerosp. Electron.Syst.Vol.39,No.3, pp.1074-1083,2003.

[11] Blackman, S.S, "Multiple hypothesis tracking for multiple target tracking, " IEEE Aerosp. Electron. Syst., Vol.19, pp.5-18, Jan 2004.

[12] Hue, C.; Le Cadre, J.-P.; Perez, P.; "Sequential Monte Carlo methods for multiple target tracking and data fusion" IEEE Trans. on Vol. 50, pp.309-325, Feb. 2002.

[13] Lin, X., Kirybarajan, T., and Bar-Shalom, Y. Multi-sensor bias estimation with local tracks without a priori association. In Proceedings of SPIE Conference on Signal and Data Processing of Small Targets, vol. 5204, San Diego, CA, Aug. 2003.

[14] Stone, L. D., Williams, M., and Tran, T. Track-to-track association and bias removal. In Proceedings of SPIE Conference on Signal and Data

Processing of Small Targets, vol. 4728, Orlando, FL, Apr. 2002.
[15] Agate, C ., and Sullivan, K. J. Road-constraint target tracking and identification using a particle filter. In Proceedings of Signal and Data Processing of Small Targets, vol. 5204,SPIE, 2003.
[16] Lin, L., Kirubarajan, T., and Bar-Shalom, Y. New assignment-based data association for tracking move-stop-move targets. In Proceedings of International Conference on Information Fusion. Annapolis, MD, July 2002, 943—950.
[17] Ristic, B., Arulampalam, S., and Gordon, N. Beyond the Kalman Filter, Particle Filters for Tracking Applications. Norwood, MA: Artech House Publishers, 2004.
[18] Zhang, X., Willett, P. and Bar-Shalom, Y. The Cram ' er-Rao Bound for Dynamic Target Tracking with Measurement Origin Uncertainty. In The 41st IEEE Conference on Decision and Control, 2002.
[19] Hue, C., Le Cadre, J.-P., and P ' erez, P. Performance Analysis of Two Sequential Monte Carlo Methods and Posterior Cram ' er-Rao Bounds for Multi-Target Tracking. Technical report, IRISA, 2002 [20] Lin, X., Kirubarajan, T., and Bar-Shalom, Y. Multi-sensor-multi-target bias estimation for asynchronous sensors. In Proceedings of SPIE Conference on Signal Processing, Sensor Fusion, and Target Recognition XIII, vol. 5429, Orlando, FL, Apr. 2004.